Resurrection Medical Center
1.45 MW CHP Application

Fact Sheet

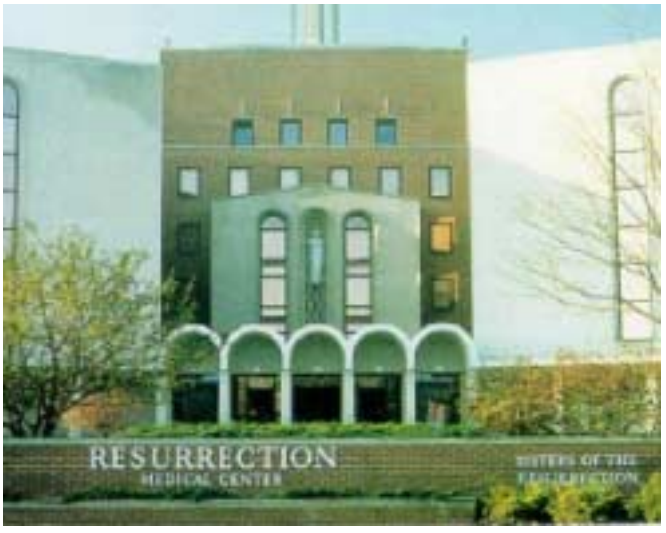
CHP Application

Like many other hospitals, Resurrection Medical Center, a not-for-profit hospital in Chicago, Illinois wanted to provide its patients with affordable and quality health care. Continuously, the hospital was looking for ways to make their 24 hour hour-per-day facility more efficient and economical without cutting any corners. In 1989, a solution was arrived at when a 1.45 megawatt CHP (Combined Heat and Power) Plant was installed to generate on-site electrical power and recover the generated heat to supply heating, hot water and cooling, through an absorption chiller, to the hospital. The new system saved the hospital over $400,000 annually in electric costs.

QUICK FACTS

Annual Savings:	$250,000
Installed Cost:	$2.7 Million
Estimated Payback:	10 Years
Actual Payback:	8 Years
Generating Capacity:	1.45 Megawatts
Operation Since:	August, 1989
Facility Size:	1,250,000 sq ft
	434 Beds

Following the CHP installation, the electric utility was allowed to offer a lower rate, Rider 27. This resulted in the CHP system sitting idle. This practice by ComEd is no longer allowed and deregulation will likely provide the financial incentive to recomission the CHP system.



REASONS FOR CHP

"RISING ENERGY COSTS"
&
"POWER RELIABILITY"

Rising energy costs turned Resurrection Medical Center to generating their own power. Utilizing the waste heat in the form of low pressure steam and the capability to parallel with the electric grid helped sell the idea of Combined Heat and Power along with the cleaner and more reliable power available.

The local gas utility, Peoples Gas, offered RMC air conditioning and CHP incentives that reduced the cost of their system's installation over $150,000. Resurrection Medical Center realized an 8 year payback on the CHP system. The $2.7 million CHP project was financed in-house; RMC is a not-for-profit organization that finances all purchases internally.

SYSTEM EQUIPMENT

- Two 725-kW 7100G Waukesha natural gas powered engines, 12 cylinder, rated at 1200 rpm, each engine driving a 480 volt generator
- Heat recovery equipment generates maximum near 7 million Btu/hr (7000 lbs. of steam per hour at 14 psi)
- Johnson Building Automation Controls JC-8540, enabling engineering staff to monitor and control all HVAC equipment
- 550-ton steam powered Carrier absorption chiller
- Two Carrier 1500-ton centrifugal chillers

CHP OPERATION

Currently, Resurrection Medical Center does not operate the engines. The hospital was offered a lower electric rate in 1987 and took advantage of this opportunity. The CHP system operated:

- Monday through Friday
- 13 hours per day
- 9:00AM through 10:00PM

The CHP equipment operates parallel to the grid and peak-shaved to minimize peaks while covering demand. For maximum benefit, the two engines operated at full load during peak hours only. In the cooler seasons, the absorption chiller handles all cooling requirements reducing the CHP engines output.

PROJECT INFORMATION

- When the CHP system was installed, the chiller piping systems were re-routed to further reduce the system's overall cooling costs
- Engineering Staff of RMC worked with outside consultants from Environmental Systems Design, Inc. and Johnson Controls to form the CHP solution and project design
- The absorption chiller uses waste heat to create steam, then chilled water, which is used to provide air conditioning to the hospital

ADDITIONAL FACTS

- Resurrection Memorial Hospital required 2,000,000 kWh of electric power in 2002
- RMH is considering turning on their CHP equipment when deregulation arrives
- RMH was satisfied overall with their CHP system although maintenance costs were higher than expected near 2¢ per kWh generated (estimated initially at 1¢ per kWh)
- One of the two existing Carrier 1500-ton centrifugal chillers was designated to standby status when the absorption chiller was installed
- Charles Equipment Supplier supplied the CHP equipment and servicing
- Johnson Controls, Inc. installed the Combined Heat and Power system

$250,000 annual energy savings

Absorption chiller covers entire cooling load during cooler seasons

RMC is considering CHP operation when deregula-tion arrives

For further information contact

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